NWRS Region 5 FY 2011 Annual Report

1. Introduction

1.1. Present the vision, goals, and objectives for the regional I&M Initiative.

The National Wildlife Refuge System Inventory and Monitoring (NWRS I&M) Initiative is designed to address the Refuge System's mission-critical information needs, and to help plan and evaluate the effectiveness of conservation strategies implemented by USFWS and conservation partners in the face of accelerating climate change and growing threats from other environmental stressors. This annual report describes the implementation of the NWRS I&M Initiative within the Northeast Region (Region 5) during FY 2011. A memo dated February 5, 2010 from the Region 5 Chief of Refuges provided two-year Annual Work Plan advice for NWRS stations in this region, including implementation of the I&M Initiative.

Vision for the Region 5 Refuge Program

To use sound science that informs management decisions to allow us to be effective and efficient in our management, and identifies our most important resource contributions at the local refuge, LCC, and Regional landscape scales.

This Program is guided by six priorities established by the USFWS Directorate

- National Wildlife Refuge System: Conserving our Lands and Resources.
- Landscape Conservation: Working with Others.
- Migratory Birds: Conservation and Management.
- Threatened and Endangered Species: Achieving Recovery and Preventing Extinction.
- Aquatic Resources: National Fish Habitat Action Plan and Trust Species.
- Connecting People with Nature: Ensuring the Future of Conservation.

The Region 5 Chief of Refuges identified five goals for FY 2010 and FY 2011, the last of which addresses the NWRS I&M initiative:

Goal 1: Provide for management of habitats and populations on refuge lands

Goal 2: Implement actions needed to meet the outcomes and outputs that are incorporated into the Regional Annual Performance Planning System (RAPP) targets, and by extension Government Performance and Results Act (GPRA) and the President's Management Agenda, and each refuge's Annual Work Plan

Goal 3: Implement the six priorities of the Service

Goal 4: Begin needed work to rebuild staff on field stations now that base budgets and financial solvency have been attained

Goal 5: Begin Implementation of the NWRS I&M efforts in accordance with the *Draft Strategic Plan for Inventories and Monitoring on National Wildlife Refuges: Adapting to Environmental Change.*

Multiple tasks were listed under each of the six Service priorities. The tasks that directly pertain to the I&M efforts are summarized below:

Task 1: Use common and scientifically defensible inventory and monitoring procedures where possible and available. Discontinue inventory processes that do not support priority work, yield useful data, or are scientifically deficient (adapted from Goal 5 above).

Task 2: Comprehensive Conservation Plan (CCP)/Habitat Management Plan (HMP) and Wildlife Inventory and Monitoring Plan. Continue to make CCP completion your highest priority, through educating staff and facilitating contracting, as well as working closely with the planner/coordinator who is assigned to your project. The CCP remains the number one priority, per the Director's guidance.

Task 3: Participate in ecoregional planning/Landscape Conservation Cooperative (LCC) activities with other programs and Service partners. Ensure that CCPs and HMPs incorporate ecoregional priorities (i.e., LCC Plans when available; bird conservation region plans, fish habitat joint venture plans, recovery plans, State Wildlife Action Plans).

Task 4: Participate in multi-refuge efforts to manage similar habitats for migratory birds and other wildlife. Monitor birds using the best available scientifically defensible protocols.

Task 5: Impoundments. Many of our impoundments are critical to waterbird migration and management. Impoundments also provide opportunities for wildlife viewing that can help build support for conservation. As each refuge completes its CCP and HMP, you should critically examine your impoundments, especially those that are in-stream, to determine if they are meeting refuge objectives. If impoundments are not helping us to meet our trust resource values, or they do not contribute to the purposes for which the unit was established, then serious consideration should be given to restoration of stream and coastal habitats for birds, fish, and mussels. This should be consistent with your refuge purposes, a priority for your ecoregion, or a focus of fishery management efforts as defined by FR and/or our Partners.

Task 6: Evaluate the management decisions made (local, landscape, and regional) and determine what data are needed to help make informed decisions (added by Region 5 Division of Natural Resource staff to meet the Chief's goals).

Task 7: Assist in addressing refuge controversial issues, public-use impacts, and other issues (added by Region 5 Division of Natural Resource staff to meet the Chief's goals).

Task 8: Provide NCTC training (added by Region 5 Division of Natural Resource staff to meet the Chief's goals).

1.2. Briefly describe how the regional I&M Initiative is organized with emphasis on the previous FY work activities.

Region 5 has many existing and ongoing projects that relate to I&M, adaptive management, and strategic habitat conservation. These projects generally fall under coastal ecosystems, freshwater wetlands, and shrub and forested habitats. I&M-funded staff work with other staff within the R5 Division of Natural Resources (DNR) in support of these projects and other similar, refuge-specific projects.

1.3. Briefly describe how the regional I&M Initiative integrated with the regional refuge biological program.

In response to the NWRS I&M Initiative, the Region 5 Refuges Program reorganized to create a Division of Natural Resources (DNR) that contained regional biological staff that would provide support for

new and ongoing I&M projects as well as in making both regional- and refuge-specific biological decisions. Three of the six I&M-funded positions are integrated within DNR. DNR staff is supervised by a Division Chief and is comprised of a Regional Refuge Biologist, an Assistant Regional Refuge Biologist, a Wildlife Biologist, the Regional I&M Coordinator, Modeler (vacant, I&M position shared with Region 3), and the I&M Database Manager (Figure 1). The DNR Chief is supervised by the Region 5 Deputy Chief of Refuges.

1.4. Briefly describe how the regional I&M Initiative coordinates with the other regional FWS programs (Migratory Birds, T&E Species, Ecological Services, Fisheries, and LCCs) as well as other federal and state conservation partners. What role does the regional I&M Initiative serve within the LCC?)

The R5 I&M Coordinator is co-located in the Northeast Regional Office with these FWS programs and Science Applications staff (including the North Atlantic LCC Coordinator). The I&M Coordinator regularly communicates with staff from other Service programs, and attends the weekly Science Applications staff meeting when not on travel. For instance, the I&M Coordinator worked with the Avian Health and Disease Program's (AHDP's) R5 representative with Migratory Birds to use AHDP funds to hire biotechs as part of the Integrated Waterbird Management and Monitoring (IWMM) pilot project; these and existing biotech collected data to help inform the IWMM effort and survey design plans for ADHP (i.e., baseline data on occurrence of diseased and dead birds in Regions 3, 4 and 5.

2. Public Interest Highlights

- Development of a Maine Seabird Database will greatly enhance the ability of resource managers to evaluate trends in species abundance and distribution. In addition, the data will help prioritize seabird nesting islands for acquisition by conservation agencies.

3. Staffing

The Regions 5 Refuges staffing model for its Biology program is based on DNR staff plus shared regional positions designed to support I&M projects, in part. These shared positions typically are located at field stations, are supervised by project leaders, and have 50% regional responsibilities (GIS staff have 100% regional responsibilities). R5 is in the process of setting regional goals and objectives that will inform how these regional shared positions will better integrate with DNR efforts and support I&M projects.

I&M-funded Staff within DNR

Bill Thompson, Regional I&M Coordinator, Regional Office, Hadley, MA
Kelly Chadbourne, Regional I&M Data Manager, Great Bay NWR and Falmouth, ME Field Office
Modeler (Vacant, 0.5 position to be shared with Region 3)

Other R5 DNR Staff

Fish & Wildlife Administrator, Chief of DNR (Vacant since 6/2011), Regional Office, Hadley, MA
Harold Laskowski, Fish & Wildlife Administrator, Chief of DNR (Retired 6/2011), Bombay Hook NWR, DE
Janith Taylor, Regional Refuge Biologist, Great Bay NWR, Newington, NH
Laura Eaton-Poole, Wildlife Biologist, Great Bay NWR, Newington, NH
Jennifer Casey, Assistant Regional Refuge Biologist, Umbagog NWR, Errol, NH

Shared Regional Biology Positions – I&M Funded

Thomas LaPointe, Northern Forest Land Management Research Demonstration (LMRD) project Supervisory Forest Ecologist, Umbagog NWR, Errol, NH
Michael Heath, Northern Forest LMRD Forester, Moosehorn NWR, Baring, ME
Jeremy Goetz, Northern Forest LMRD Forestry Tech., Silvio O. Conte NFWR (Nulhegan Basin Division), Brunswick, VT

Shared Regional Biology Positions – Other Funded

Susan Adamowicz, LMRD Saltmarsh Biologist, Rachel Carson NWR, Wells, ME
William Crouch, Coastal Ecologist, Edwin B. Forsythe NWR, Oceanville, NJ
Curt Kessler, Coastal Ecologist, Long Island NWR Complex, Shirley, NY
Fred Wurster, Hydrologist, Great Dismal Swamp NWR, Suffolk, VA
David Bishop, Invasive Species Biologist, Back Bay NWR, Virginia Beach, VA
Richard Schauffler, GIS Specialist, Rachel Carson NWR/Great Bay NWR, Newington, NH
Leslie Vilchek, GIS Specialist, Blackwater NWR, Cambridge, MD
John Eaton, GIS Specialist, Sivio O. Conte NFWR, Sunderland, MA

Key Cooperators

Bernd Blossey, Cornell University
Jeff Buler, University of DE
John Coluccy, Ducks Unlimited
Deanna Dawson, USGS Patuxent Research Center
Chris Dwyer, Region 5 USFWS Migratory Birds
Glenn Guntenspergen, USGS Patuxent Research Center
Mike Irwin, USGS Patuxent Research Center
Sarah Jacobi, Chicago Botanical Gardens
M.J. James-Pirri, University of RI
Tim Jones, Region 5 USFWS Migratory Birds
Eric Lonsdorf, Chicago Botanical Gardens
Jim Lynch, National Park Service
Jim Lyons, Region 9 USFWS Migratory Birds
Laura Mitchell, Region 5 USFWS Fire Program
Clint Moore, USGS Patuxent Research Center
Hillary Neckles, USGS Patuxent Research Center
Norb Psuty, Rutgers University
C. J. Ralph, U.S. Forest Service, Pacific Southwest Research Station
Greg Shriver, University of DE
John Stanton, Region 4 USFWS Migratory Birds
Andy Wilson, Gettysburg College

4. Accomplishments - Activities and Products

A priority for R5 in FY2011 was to solicit Part 1s of the Draft I&M Policy from refuges in the region. All but one refuge/refuge complex submitted draft versions of their Part1s. DNR staff then held three workshops, attended by 24 refuges or refuge complexes, to provide further guidance regarding the type and level of detail to include in the Part 1s, as well as to solicit feedback from refuge staffs on how to improve Part 1. This guidance will enable refuges to revise their Part 1s accordingly, which will enable the survey approval process to move forward.

Region 5 also has many existing and ongoing projects that relate to I&M, adaptive management, and strategic habitat conservation. These projects generally fall under coastal ecosystems, freshwater wetlands, and shrub and forested habitats. DNR-I&M staff provided additional support for these regional projects while addressing national efforts such as GRAS, PRIMR, Wilderness Character Monitoring, and Invasive Plant Species Pilot.

Because of the late receipt of the federal budget (May 2011) and the pending move to the FBMS system, there was a small window of opportunity to fund projects and generate contracts/agreements. Table 1 contains many I&M-related projects that were submitted through R5's Wildlife-Habitat Grants and Challenge Cost Share proposal process. The short timeline described above sometimes prohibited implementation of these projects in FY11. Others that were either initiated or were part of a long-term study, often collected data through late summer so final reports are not available in time of this report. Thus, many projects in Table 1 are listed as "In Progress (IP)." Results from these projects should be available by the time of the next annual report. See Table 1 for details.

5. Budget Narrative and Budget

Region 5 I&M Program within the Division of Natural Resources received a total FY2011 budget allocation of approximately $1,939,000. These funds were used to support I&M salaries and projects within Region 5 as per the following categories.

Salaries: $764,000
Refuge/Multi-refuge I&M projects: $522,000
Contracts and Agreements: $561,000
Region 5 General Operations Support (2.64%): $50,500

Salary savings from vacancies and delayed hires were used to pay for permanent change of station (PCS) costs for the three Northern Forest – LMRD hires. Remaining funds will be used to hire a post doc through a CESU Task Agreement with the Univ. of DE to assist with writing an I&M Plan for the Saltmarsh Integrity Project.

6. Appendix – Map of NWRS Stations in Region 5, by State and LCC

Table 1. Region 5 Inventory and Monitoring Activities, Staff, Funding and Status by Project or Theme

Blueprint Objectives and Tasks	Project or Theme; Status and Accomplishments	Product	I&M Staff	Funding I=I&M R=Refuges O=Other	Status P=Planned F=Funded IP=In progress C=Completed
IDENTIFY I&M PRIORITIES					
General	*I&M Part I of the draft I&M Policy* R5 DNR staff hosted workshops at Patuxent Research Refuge, Parker River NWR, and John Heinz NWR to provide additional guidance to staffs from 24 refuges and refuge complexes in attendance for completing their draft Part Is. R5 Data Manager entered Draft Part 1-I&M Plans for 52 refuges in the PRIMR database (in some cases, complexes only entered one plan for all their refuges). DNR staff continue to review Part 1s submitted by refuges..	Refuge staffs are revising their draft Part Is as per additional guidance. Draft Part 1-I&M Plans for 52 refuges/refuge complexes entered into the PRIMR database	Bill Thompson (DNR-I&M) Kelly Chadbourne (DNR-I&M) Other DNR staff: Hal Laskowski (Retired) Jan Taylor Laura Eaton-Poole Jennifer Casey	I, R	IP
1A	*Refuge Planning* Develop Habitat Management Plans (HMPs) for each refuge.	As of FY11: 13 refuges = Approved HMPs 4 refuges = HMPs >90% complete 8 refuges = HMPs 75-90% complete 7 refuges = HMPs 50-75% complete 3 refuges = HMPs 10-50% complete	Jan Taylor (DNR)	R	IP
General	*Regional Goals and Objectives* DNR staff are developing regional goals and objectives to be used as their work guidance and to better integrate shared regional biologist positions into DNR and I&M projects.	Draft document outlining regional goals and objectives.	Jan Taylor (DNR; lead) Laura Eaton-Poole (DNR) Jennifer Casey (DNR) Bill Thompson (DNR-I&M) Kelly Chadbourne (DNR-I&M)	R	IP

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	ABIOTIC RESOURCES - INVENTORIES				
2A	*Water Resource Inventory and Assessment (WRIA)* Regional Hydrologist Fred Wurster initiated a contract to conduct the baseline information gathering for 8 refuges (TBD) during FY11-13; this information will be used to complete the WRIAs. Regional Hydrologist also spent about 3 percent of his time working with the I&M national water quality team, led by Mike Higgins of the Fort Collins I&M Office, to refine the WRIA process and advise the team on the development of a database.	Draft final reports of WRIAs for Patuxent NRR and Cape May NWR. WRIAs initiated at Erie and Moosehorn NWRs.	Fred Wurster (Regional Hydrologist) Jan Taylor (DNR) Bill Thompson (DNR-I&M)	I, R	IP
2A	*Hydrogeomorphic Assessment* Perform a hydrogeomorphic (HGM) assessment for each refuge.	Initial meeting with contractor in August 2011.	Fred Wurster (Regional Hydrologist)	R	IP
5A	*Climate Change/Sea Level Rise* Conduct vulnerability assessments at coastal refuges. Provide assessment tool for all refuges. Assist with setting goals and objectives for CCP/HMP.	Vulnerability assessments initiated for Parker River NWR (individual refuge assessment for CCP) and Eastern Shore of VA NWR (Pilot for NWRS).	Jan Taylor (DNR)	I	IP
2A	*National Wetlands Inventory* Upgrade National Wetlands Inventory information at refuges.	Ongoing projects at S. O. Conte NFWR and Wallops Island NWR	Jan Taylor (DNR)	I	IP
5A	*Imagery Needs* Purchase imagery for Iroquois NWR.	Used National I&M funds to purchase imagery.	Kelly Chadbourne (DNR-I&M) Jan Taylor (DNR)	I	C
General	*Contaminants Assessment Process (CAP)* The Contaminants Assessment Process (CAP) is a standardized and comprehensive approach used to assess potential threats posed by environmental contaminants to National Wildlife Refuges as well as other Service lands. CAPs were conducted on 7 refuges/refuge complexes in FY11: Bombay Hook, Canaan Valley, Great Dismal Swamp, Great Swamp, ME Coastal Islands, Parker River and S. B. McKinney.	CAPs reports in progress.	R5 Regional Office	I	IP

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General	*Carbon Sequestration Potential of Restored/Managed and Natural Tidal Salt Marshes in Region 5* The proposed work directly addresses the USFWS Climate Change Strategic Plan goal of increasing biological C sequestration through habitat creation programs, i.e. tidal salt marsh restoration, through direct measurements of standing stocks and rates of C sequestration by tidal salt marshes that were restored. Cooperative agreement finalized August 4, 2011. In consultation with the LMRD Biologist, it was agreed that the project was best postponed until FY12 due to the difficulty of acquiring graduate student assistance at such a late date in the field season.	Project is ongoing.	Sue Adamowicz (LMRD Biologist)	I,O	IP
1E	*National Vegetation Mapping Team* Regional GIS Specialist joined the National I&M Vegetation Mapping Team. He spent about 2% of his time on this activity, which will likely increase as the Team moves forward.	Team membership.	Les Vilchek (Regional GIS Specialist)	I,R	IP
	ABIOTIC RESOURCES - MONITORING				
2A	*Hydrologic and Water-Quality Factors Affecting Habitat Restoration and Management* The third year of a 3-year study to quantify the interaction of groundwater and surface water between refuge ditches and refuge wetlands at Great Dismal Swamp NWR. Years 1 and 2 covered installation of water monitoring equipment and preliminary data analyses. Year 3 was funded to support more complete data analyses, preparation of a draft manuscript for publication in a peer-reviewed journal, and preparation of a document summarizing the management implications of the 3-year study.	Data collected at 76 groundwater monitoring wells (includes 20 news wells installed in 2011). . Information incorporated into management decisions at Great Dismal Swamp NWR. Presentations of project results to refuge staff and at a scientific conference.	Fred Wurster (Regional Hydrologist) Gary Speiran (USGS)	I, R	IP
5A,5B	*Coastal shoreline change monitoring* Work with cooperators (NPS, Rutgers Univ.) to implement standard protocol for monitoring coastal shoreline change on selected Region 5 refuges.	Natl. I&M funds purchased 3 R8 GNSS packages to obtain survey grade elevation information.	Kelly Chadbourne (DNR-I&M)	I,R	IP

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5A	*Collect information needed to assess vulnerability of coastal NWRS stations to sea level rise and other stressors* Assist with training of refuge staff for establishing SETs on cooperating refuges based on a standard protocol developed by cooperators (NOAA, NPS, USGS).	NPS and cooperators are working on a draft protocol.	Sue Adamowicz (LMRD Biologist) Jan Taylor (DNR) Laura Eaton-Poole (DNR) Kelly Chadbourne (DNR-I&M) Bill Thompson (DNR-I&M)	I,R	IP
5A	*Restoring Diked and Ditched Salt Marshes: Taking Lessons to the Public* The LMRD program currently has two cutting edge saltmarsh restoration projects in progress: removal of an old agricultural dike in the middle of the Mousam River salt marsh and restoration of ditched marshes at Goose Rocks (Rachel Carson NWR) and Plum Island (Parker River NWR). Restoration activities are scheduled for Fall 2010 and Winter 2010-2011. The purpose of these restoration activities is to increase salt marsh resilience to offset stresses of accelerated sea level rise. We desire to continue evaluating these sites to determine effects of restoration efforts. We also plan to develop the sites into demonstration areas through interpretive signage, web-site information, visitor contact area material and interaction with resource managers and the public. Field monitoring (water levels, vegetation, elevation) conducted at research locations at Parker River and Rachel Carson NWRs. Submission made for interpretive panels submitted June 27, 2011 Purchase order for panels finalized September 16, 2011.	Project is ongoing.	Sue Adamowicz (LMRD Biologist)	I	IP

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	BIOTIC RESOURCES - INVENTORIES				
General	*Cherry Valley NWR Bat Surveys* Completed 6 nights of mist netting at 4 locations both on-refuge (3 nights; 2 locations) and off-refuge within the acquisition boundary (3 nights; 2 locations). This is the first time bats have ever been surveyed at this refuge. surveys resulted in the capture of 40 bats of 3 species, including 34 big brown bats *(Eptesicus fuscus)*; 5 northern long-eared bats *(Myotis septentrionalis*, each banded*)* and 1 hoary bat *(Lasiurus cinereus)* scouting sites; making contacts and obtaining permissions from off-refuge landowners; conducting surveys; completing follow-up decontamination of equipment; and collecting, entering, and analyzing GIS data. These temporary personnel also presented a public bat program to community members, followed by an opportunity for participants to observe the refuge's bat research efforts. Purchased acoustic bat detector (Anabat SD2) that was used to conduct 2 nights of acoustic surveys and will be used in future monitoring.	Summary report of survey results. Public presentation.	Marilyn Kitchell (Wallkill River NWR)	I, O	C
General	*Wallkill River NWR Bat Surveys* Completed 8 nights of mist netting at 6 locations on the refuge, as follow-up to work conducted in 2008, 2009 and 2010. It also funded the purchase of an acoustic bat detector (Anabat SD2) and the completion of 10 nights of acoustic surveys (3 nights monitoring basic activity levels and 7 nights with the new detector facilitating analysis-to-species). The surveys resulted in the capture of 54 bats of 4 species, including 43 big brown bats *(Eptesicus fuscus)*, 6 red bats *(Lasiurus borealis)*, 4 northern long-eared bats *(Myotis septentrionalis*, banded) and 1 tricolored bat *(Perimyotis subflavus*, also banded). Three *M. septentrionalis* were transmittered, leading to the identification of 3 roosts (2 trees on-refuge and 1 house off-refuge). The acoustic surveys additionally facilitated the detection of at least one hoary bat *(Lasiurus cinereus)*, Indiana bat *(Myotis sodalis)* and little brown bat *(Myotis lucifugus).*	Summary report of survey results Presented a public bat program as a part of a neighboring refuge's (Great Swamp) BioBlitz.	Marilyn Kitchell (Wallkill River NWR)	I, O	C

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General	*Maine Seabird Atlas* Maine Coastal Islands NWR is partnering with Maine Department of Inland Fisheries and Wildlife and the Maine Natural History Observatory to develop a Maine Seabird Atlas. This project includes creating an Access database that summarizes all existing seabird data from the 1970's through the present, including geographic information, data quality, survey method, location, size, and species composition of seabird colonies along the Maine coast. The database has been completed and now supports 13,000 records, and will allow managers, for the first time, to evaluate population trends and query information on the abundance and distribution of seabirds. The contractor is now working on the production of a Seabird Atlas. Currently evaluating maps for the Atlas and are finalizing page layout. Anticipated project completion to be early in 2012. The Atlas will be available as a PDF and a printed document.	Seabird database supporting 13,000 records.	Linda Welch (ME Coastal Islands NWR)	I, O	IP
BIOTIC RESOURCES - MONITORING					
1C	*Biometric Assistance to Refuges* Hire or contract a biometrician to assist Region 5 refuges with analysis of their legacy I&M data.	CESU Task Agreement with the Univ. of AK – Fairbanks, Post doc hired	Bill Thompson (DNR-I&M)	I	IP

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General	*Cherry Valley Bog Turtle Telemetry and Habitat Management* Conducted extensive survey work that focused on 3 locations within the Cherry Valley NWR acquisition area – the Winery (refuge-owned) and the Crovatan and Christine properties (owned by The Nature Conservancy). Surveys resulted in the twice-weekly radiotracking of 10 turtles (equipment purchased by TNC) and in the additional identification of 12 new turtles that were marked and released. The grant also funded extensive invasive species control (specifically purple loosestrife, Japanese knotweed and Japanese barberry) to improve bog turtle habitat at all 3 locations; and the purchase of herbicides and EZ-ject lances to facilitate the removal of woody vegetation (habitat management to be conducted in October). Extensive habitat restoration was conducted at the Winery, where additional survey and restoration work will continue into the future. Predator removal (mammalian) is ongoing at the Crovatan and Christine properties, where 3 adult turtles were found to have been predated this year. These data will be used to inform habitat management and to serve as a baseline for comparisons of pre- and post-restoration distribution of bog turtles on these properties.	Summary report of preliminary results.	Marilyn Kitchell (Wallkill River NWR)	I, O	IP

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General	*Conservation and Recovery of the Puritan Tiger Beetle (Federally Threatened)* Region 5 contains the entire world's population of this federally-listed beetle. They are found only along the Connecticut River (two remaining sites out of 11 historic ones) and the Chesapeake Bay. The objectives of this study are to: 1. Estimate adult population at Deadman's Swamp & Rainbow Beach during the breeding season (late June through early August). 2. Document larval numbers & ages (2-year larval stage) at both sites. 3. Control encroaching vegetation at both sites to enhance potential larval habitat. 4. Monitor & evaluate public uses (funding from Holyoke Gas & Electric to MA Dept of Conservation & Recreation). 5. Maintain Refuge boundary signs at the Deadman's Swamp Unit. 6. Identify landowners with suitable, but unoccupied habitat so that conservation options may be discussed.	Project is ongoing.	Barry Parrish (S. O. Conte NFWR)	I, O	IP

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General	*Management of Northern Red-bellied Cooters & Blanding's Turtles* Habitat enhancement, protection and population management of a federally listed species (northern red-bellied cooter) and another in decline (Blanding's turtle) at four refuges in MA. Northern Redbellied Cooters at Massasoit Refuge: Initiated a northern redbellied cooter trapping program at Massasoit Refuge in an effort to determine size, sex ratio and age structure of the population. Caught 1 male and 5 females, all breeding-aged adults) Blanding's Turtles at Assabet River Refuge: Partnered with Bristol County Agricultural High School to headstart 54 Blanding's turtles which originated from Oxbow Refuge. In late May, the high school sophomores came to Assabet River Refuge to release the turtles. This was the 4th year of turtle releases (transplanted turtles now range from hatchling age to 14 years) and all radioed turtles were located weekly to track movement patterns and document habitat preferences. Road surveys were done throughout the summer, and no mortalities occurred. Blanding's Turtles at Great Meadows Refuge: Worked with a local researcher to continue tracking movements and survival (with hoop traps) of Blanding's turtles. Preliminary data suggests turtles are shifting their distribution within the 200 acre impoundments. Only 8 nests were found on neighboring properties, and very low success. Multiple interpretive walks/talks were held on site, as well as in local schools.	Report of preliminary results.	Stephanie Koch (Eastern MA NWR Complex)	I, O	IP
General	*Converting Military Bunkers into Bat Hibernacula* Great Bay NWR was established in 1992 from lands part of the former Pease Air Force Base, including the area used as the weapons storage area and the associated infrastructure. The plan is to modify two of the 15 former military bunkers to make them more functional for use as hibernacula by bats.	Project is ongoing	Nancy Pau (Parker River NWR) Jan Taylor (DNR) Laura Eaton-Poole (DNR)	I	IP

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General	*Indiana Bat Distribution and Habitat Use Research and White Nose Syndrome Monitoring* Great Swamp NWR contains the only known Indiana bat (endangered) maternity colonies within the NWRS. Intensive field research has been conducted every summer since 2005 resulting in a robust dataset of spatial distribution, habitat use, and demographic information. During the winter of 2008, the hibernacula where the majority of the refuge's Indiana bat population overwinters was exposed to White Nose Syndrome (WNS). Data collected during the summers of 2009 & 2010 indicate a sharp and significant decline in Indiana bat numbers. Other bat species, such as the little brown bat, suffered similar documented declines. In fact, Great Swamp NWR has probably the most detailed pre/post-WNS dataset in the country.	Project is ongoing	Craig Bitler (Great Swamp NWR - Retired)	I, O	IP

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General	*Management and Monitoring of Red Knots and Horseshoe Crabs* Horseshoe Crab Surveys: Horseshoe crab surveys were not conducted as originally planned. In past years, horseshoe crab surveys have been coordinated state wide during peak spawning times to provide an overall index of the State's spawning population. This season, many partners decided to not conduct surveys due to lack of funds and staffing, and it was decided that the value of our survey data was going to be greatly diminished without the larger landscape survey effort. Therefore, we directed more money than originally planned towards Red Knot work (see below). We did continue our horseshoe crab tagging effort and tagged 598 crabs on the Refuge. Resight reports are still trickling in. We also had a volunteer visitor services intern who frequently spoke to visitors about the horseshoe crab – shorebird connection and the importance of conservation. Red Knots: Purchased 50 geolocators (instead of the intended 25), which were all placed on juvenile Red Knots trapped in Chatham, MA in September. Recaptured 5 adult Red Knots that were originally outfitted with geolocators in 2009. Post-processing of these data are underway now. Deployed geolocators on 50 birds and unique alpha-numeric flags on an additional 125 Red Knots. Resighting surveys of color-banded Red Knots were conducted on average 3x/week beginning in early July, and will continue through October. Thousands of records of resighted birds are being compiled now and will be uploaded to bandedbirds.org and analyzed this winter.	Summary report of preliminary results.	Stephanie Koch (Eastern MA NWR Complex) Kate Iaquinto (Monomoy NWR)	I, O	IP

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General	*Management of Endangered Roseate Terns* Prior to the 2011 nesting season, a Roseate Tern attraction system was installed in the Common Tern colony that was comprised of a sound system borrowed from Mass Audubon's Coastal Waterbird Program and Roseate Tern decoys acquired from the Massachusetts's Division of Fisheries and Wildlife. As a result, seven pairs of Roseate Terns were confirmed to be nesting on South Monomoy and five pairs were confirmed to be nesting on Minimoy. Tern pairs to utilize the provided nesting structures. All confirmed Roseate Tern nests were carefully monitored and chicks were tracked until they were no longer able to be found (15+ days). All chicks were banded with a standard BBL service band and a metal field readable band. Additionally, adults were opportunistically trapped using potter traps: unbanded adults were captured and banded with a standard BBL service band and a metal field readable band and banded adults were recaptured and reported to the BBL. Following the Roseate Tern breeding season, staging counts and resighting were conducted at both South Monomoy and Minimoy, in addition to areas of neighboring South Beach. Visitor center volunteers created a nesting tern display during 2010, which provided valuable information to guests about Roseate Tern ecology and the natural history of Roseate Terns nesting at Monomoy National Wildlife Refuge. This display provided a guide for both interns and volunteers to convey accurate and up-to-date information to visitor center guests about Roseate Terns at Monomoy.	Summary report of results.	Stephanie Koch (Eastern MA NWR Complex) Kate Iaquinto (Monomoy NWR)	I, O	IP

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General	*Impacts of Mercury on Saltmarsh Sparrow Productivity* Completed the 5th year of productivity monitoring on salt marsh sparrows at Parker River Refuge. In 2011, observed a dramatic decrease in the number of nests found, first noticed last year. From 2007 through 2011, the number of active nests found was 32, 48, 41, 21, and 11, respectively. Conducted a marsh-wide sparrow mistnetting effort, and found a much lower ratio of fledglings to adults compared to other sites in New England. Will be comparing mercury levels and productivity data at the various sites this winter to investigate the cause. Also will be analyzing the 5 years of productivity data and 3 years of nest attentiveness (iButton data) to identify any associations between productivity and female mercury levels.	Summary report of preliminary results.	Nancy Pau (Parker River NWR)	I, O	IP

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General	*Saltmarsh and Nelson's Sparrows Management and Monitoring* <u>Identifying important areas, or source populations, for saltmarsh passerines to inform long term monitoring protocols and conservation plans.</u> Joined the larger SHARP project and collaborated by adding three additional intensive demographic sites (two in ME, one in NH), as well as provided expertise and experience in conservation genetics. Genetic samples were collected from over 200 adult sparrows in 3 marshes (87 in Chapman's Landing, NH, 91 in Eldridge Marsh, ME, and 32 from Little River Marsh, ME; the latter 2 sites are Rachel Carson NWR marshes in Wells, Maine). Over 600 new samples will contribute to investigations of genetic connectivity and source-sink dynamics across the breeding range. Also conducted intensive demographic work on 3 marshes, including the 2 coastal marshes in Wells, Maine and one inland marsh in Chapman's Landing, NH. <u>Investigate migration connectivity between key wintering and breeding grounds</u> Genotyped 90 samples from Saltmarsh Sparrows captured on the wintering grounds in Virginia, provided by collaborating partners from the Center for Conservation Biology. Population genetic analyses will be conducted this fall to see if individuals can be assigned to any of our current reference populations on the breeding grounds. <u>Determining the extent of the hybrid zone and inform managers and allow for the identification of remaining "pure" saltmarsh sparrow populations.</u> Samples collected from partners in New Jersey and Connecticut will be incorporated into our population genetic analyses, for our continued research on identifying the extent of the hybrid zone. The genotypes will also be useful in increasing our identification of "pure" Saltmarsh Sparrows, for the purpose of developing reference populations for determining a hybrid index.	Summary report of results.	Kate O'Brien (Rachel Carson NWR)	I, O	IP

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General	*Collaborative New England Cottontail Re-introduction Soft-release and Monitoring* Live trapping began for Mashpee NWR and surrounding areas in late October and ran through the end of March 2011. 29 rabbits were trapped, 26 were sampled for genetic analysis to determine if they were New England cottontail or Eastern cottontail. DNA results determined that 16 sampled rabbits were New England cottontail while the remaining 10 were Eastern cottontail. Twenty-one rabbits were radio collared, 13 were New England and 8 were Eastern cottontails. Rabbits are tracked several times during the week and at different times of the day to determine home range and habitat use. Vegetation surveys were conducted at three sites during summer of 2011. Vegetation surveys will be conducted again in the winter to determine habitat characteristics during the leaf off period as well. Analysis of the data is currently underway but no results are available at this time. Vegetation data were also collected at Nomans Land Island NWR as part of a study to determine if it is going to be a release site for New England cottontails.	Summary report of preliminary results.	Eileen McGourty (Eastern MA NWR Complex)	I, O	IP
General	*Bog Turtle Habitat Management* Initiated survey efforts to monitor bog turtle activity within the refuge's newly acquired Armstrong Bog. This work included the repair of 2 telemetry receivers and the purchase of 10 radiotransmitters, 6 of which were used to track 2 male and 2 female bog turtles. This produced roughly 60 point locations where animals were found and began to reveal patterns of behavior that will inform habitat management to be conducted this fall (girdling/herbicidal treatment of encroaching vegetation to open the canopy and enlarge areas of suitable habitat.) It also revealed that turtles are frequently found within 6 feet of a busily-traveled road's edge, probably due to the open canopy that can be found there, and on at least one occasion have crossed the road. This information will strongly influence the habitat management to be conducted in October and will serve as a baseline against which to measure the success of that future management.	Summary report of study results.	Marilyn Kitchell (Wallkill River NWR)	I, O	C

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General	*Effects of waterfowl impoundments on rails* Investigating effects of waterfowl impoundments on the reproduction and ecotoxicology of Sora and Virginia Rail at Moosehorn NWR. During the 2011 season, we were able to find 73 additional nests and, of these, 44 were active and will be used for nest success data analysis. The 2011 season started with high spring water levels but quickly became a fairly dry summer. Most nest failure was due to depredation. During the 2011 season, 3% of nests flooded, 38% were predated, and 59% hatched. A logistic exposure model will be created using nest data from all years to determine factors affecting nest success. In 2011 we captured 56 chicks and 4 adult rails and their blood samples have been sent to Biodiversity Research Institute for mercury analysis. We also doubled our sample size for broadcast survey data and will reanalyze broadcast results to determine factors affecting probability of responding to callback surveys.	Interim report.	Ray Brown (Moosehorn NWR)	I, O	IP
General	*Saltmarsh Integrity Index* Develop a tool for assessing ecological condition of saltmarshes and evaluate the effectiveness of management actions. Purchased SETs for regional distribution. Held a workshop in May 2011 attended by USFWS, USGS and Univ. of DE partners. Scheduled two workshops to be held in January 2012. Collaborated with NPS on a SET database. Developed a contract for survey quality monument establishment.	Project is ongoing.	Jan Taylor (DNR) Sue Adamowicz (LMRD Biologist) Laura Eaton-Poole (DNR) Bill Thompson (DNR-I&M) Kelly Chadbourne (DNR-I&M)	I,R	IP
General	*Wilderness Character Monitoring* Pilot project to develop wilderness character monitoring programs at select refuges across the NWRS. Three R5 refuges - Great Swamp, Forsythe, and Moosehorn - have been identified as candidates for the pilot. Pilot is being funded through the national I&M office in Fort Collins.	Wilderness character monitoring assessment performed at Great Swamp and Forsythe NWRs. Draft final report completed for Great Swamp	Steve Henry (Great Swamp NWR)	I	IP
4B	*National Phenology Network* Engage in phenology based citizen science; partner with the National Phenology Network (NPN). Serve on the Northeast Phenology Working Group.	Continued phenological activities at Montezuma NWR and partnership with NPN.	Laura Eaton-Poole (DNR)	R	IP

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4C	*Radar Analysis of Fall Migration Stopover Sites in the Northeastern U.S.* The overall objective is to map important stopover sites in Region 5 used by landbirds during the fall migration. Methodological improvements: made several technical refinements to a previously published algorithm that corrects biases in radar reflectivity data when they are to be related to on-the-ground locations that radar targets emerge from. Added the calculation of flight direction to the algorithm that determines the air speeds of radar targets, using radar radial velocity data and radiosonde data of wind speed and direction, measured aloft in weather balloons launched at some radar stations. Software development: developed software to process radar reflectivity data to quantify where migrating birds emerge from. Program BIRDS (Bias Improvement of Radar Data System).	Progress report.	Jan Taylor (DNR)	R	IP
4C	*Migrating Fall Landbirds/Shrubland Habitats* Purpose of this project was to develop a rapid monitoring protocol suitable for assessing the status and change over time in populations of fall-migrating landbirds using shrub habitats on refuges. This included methods for both population response and quality of habitat (including vegetation species composition, structure, and productivity of food, especially fruits). Analyzed population and habitat data collected by multiple refuges, and summarized findings and recommendations in a draft final report (currently under review and revision). (Contractor: CJ Ralph). Project is working in conjunction with "*Managing and Monitoring Native Shrublands for New England Cottontail and Thicket-dependent Birds*."	Draft final report.	Jan Taylor (DNR) Laura Eaton-Poole (DNR) Bill Thompson (DNR-I&M)	R	IP
4C	*Bird Monitoring Team* Served on national Team for coordinating bird monitoring efforts among regions and with partners.	Multiple conference calls to chart a course forward.	Bill Thompson (DNR-I&M) Jan Taylor (DNR)	I,R	IP

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General	*Northern Forest LMRD* The Northern Forest Land Management Research and Demonstration (NF-LMRD) project is a landscape-level alliance between northern forest refuges (Umbagog, Moosehorn, Petit Manan, Silvio O. Conte, and Missisquoi) and their partners that focuses on scientifically based testing and development of best forest management practices for wildlife in the northeast. This project will provide small and large landowners with economically viable management tools for maintaining healthy forest ecosystems in the face of climate change.	Hired a Supervisory Forester (Umgagog NWR), Forester (Moosehorn NWR), and Forestry Tech (S.O. Conte NFWR)	Paul Casey (Umbagog NWR) Jan Taylor (DNR) Bill Thompson (DNR-I&M)	I	IP
STRESSORS					
3A	*Strategic Control and Eradication of Invasive Plants* Mapping and control plans for perennial pepperweed are being created and implemented by Parker River NWR staff and partnering refuges, organizations and agencies including Rachel Carson NWR, Massachusetts Audubon Society, Mass Bays Initiative, Essex Co. Mosquito Control, and Mass. Department of Conservation and Recreation. In the spring and early summer of 2011, these two species were mapped and the efficacy of previous treatment noted. 2 stands of knotweed which have been treated for 5 years are still present but reduced by approximately 75%. A third previously unknown stand was recorded during surveys. All three stands will be treated in fall 2011 during the optimal treatment window.	Summary report of project results. Mass Audubon Society created a "how-to" handbook on pepperweed control: http://www.massaudubon.org/saltmarsh/resources.php#pepperweed	Nancy Pau (Parker River NWR)	I, O	IP

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1F,3A	*Implementing & Evaluating Control Techniques for Phragmites* Cooperated with False Cape State Park, Back Bay NWR has an ongoing treatment program. purchase two Trimble GPS units (Nomads) for use with invasive species mapping and herbicides for ground treatment of *Phragmites*. Using a track-mounted UTV, we sprayed 3 impoundments for *Phragmites*. Evaluated a new mapping method: technicians used the new GPS units to map all patches of *Phragmites* as either points or lines , as opposed to polygons, and recorded other information such density estimates and treatment dates and methods. Using the GPS, a compass, and a laser rangefinder, technicians created a center point for each *Phragmites* patch without having to go into the patch. This represented patch saved a significant amount of time and provided an estimate for the coverage similar to the traditional polygon method. For patches that grew in linear formations (e.g. along ditches), used a buffered line approach instead of a point.	Summary report of results.	David Bishop (Regional Invasive Species Biologist)	I, O	IP

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3A	*Cutting Back on Phragmites: Implementing and Evaluating Innovative Control Techniques* Phragmites does not grow well in soils with elevated sulfide concentrations. This is known from tidal restoration projects and from pilot studies at the Parker River NWR. This project assesses the effectiveness of a new repeated, sharp-cut technique and a new facilitated sulfide treatment. FY11 Accomplishments: Modification to existing Cooperative Agreement finalized August 17, 2011. Sole Source Purchase Order Request submitted July 8, 2011 and approved August 30, 2011. Visit to possible project sites made June 28, 2011. Planning meeting held September 1, 2011 In agreement with the R5 Saltmarsh LMRD Biologist, implementation of this project was postponed until FY12 due to the lateness in getting financial approvals. The growing season had largely passed even by the time the modification to the cooperative agreement had been finalized. Application of innovative treatments in August would not have been effective from a biological or financial perspective.	Ongoing project.	Sue Adamowicz (LMRD Biologist)	I,O	IP
1F,3A	*R5 Phragmites Management Project* Held a structured decision making (SDM) workshop to assist in development of a tool for effective management of *Phragmites*. Developed a conceptual model of important influences on *Phragmites* occurrence; structured approach to identifying monitoring metrics and selecting management options. Held multiple conference calls among cooperators to chart a course forward.	Workshop results report	Jan Taylor (DNR) Laura Eaton-Poole (DNR) Bill Thompson (DNR-I&M)	I, R	IP

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1D,3A	*Invasive Species Mapping Project* An invasive species pilot program is being developed to evaluate inventory and monitoring objectives and methodologies for invasive species at multiple scales. Held two workshops: 1) to involve partners in prioritizing which species to document and at what locations to place special emphasis and 2) to train refuge staff in the inventory protocol using Trimble Nomad GPS units and in the use of RLGIS for storing the data. Preliminary survey results: Total Inventoried Acres: 1358 acres Connecticut: 645 acres Massachusetts: 88 acres New Hampshire: 625 acres Species found: <u>Connecticut (Salmon River Division)</u>: Autumn olive, Bull thistle, Burning bush*, Bush honeysuckle, Garlic mustard*, Japanese barberry*, Japanese stiltgrass, Multiflora rose*, Oriental bittersweet*, Purple loosestrife, Tree of heaven*, Wineberrry*****, Yellow toadflax* (*Indicates found on refuge land within the larger inventory area in Connecticut) <u>Massachusetts (Fort River Division):</u> Autumn olive, Bull thistle, Burning bush, Bush honeysuckle, Garlic mustard, Glossy buckthorn, Japanese barberry, Multiflora rose, Oriental bittersweet <u>New Hampshire (Mohawk Division):</u> Bull thistle, Burdock, Canada thistle, Glossy buckthorn, Orange hawkweed, Oxeye daisy, Purple loosestrife, Reed canarygrass, Sulfur cinquefoil	Preliminary report of results of pilot project.	David Bishop (Regional Invasive Species Biologist) Cynthia Boettner (S.O. Conte NFWR) Bill Thompson (DNR-I&M)	I,O	IP

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	ADAPTIVE MANAGEMENT PROJECTS				
1F	*Managing and Monitoring Native Shrublands for New England Cottontail and Thicket-dependent Birds* Designed, documented and completed the installation of our seeding and planting trials, and developed a written protocol for evaluating habitat response. Initial measurements indicate that direct seeding was much more successful in the forestry cut than the old field. The only species with an initial germination rate greater than 10% occurred in the wet forestry cut plot - red osier dogwood and swamp rose. These trials will need to be monitored for several years to determine if they are ultimately successful, as many species may require two years to germinate. However, the initial results are encouraging and our techniques will be employed across a larger landscape in 2012. Cottontail rabbits were surveyed on Refuge and partner lands in Maine and pellets were submitted to UNH for analysis. A total of 405 pellets were collected from sites in Maine surveyed by partners from USFWS & UNH for 1) a detection study, 2) monitoring purposes, and 3) population estimation. New England cottontail continues to be present in small numbers at Rachel Carson NWR. Ten recently occupied sites (2007-2010) were found to be vacant in 2011 and 3 additional occupied patches in Cape Elizabeth/Scarborough area were identified. UNH expects to provide USFWS results on detection and make recommendations on inventory and monitoring of cottontail rabbits by the end of this year.	Summary report of results.	Kate O'Brien (Rachel Carson NWR) plus staff from several other refuges. Jan Taylor (DNR) Laura Eaton-Poole (DNR)	I, O	IP

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1F	*Integrated Waterbird Mgmt & Monitoring Program* Multi-region, multi-agency project to manage and monitor migrating and wintering waterbirds, including waterfowl, shorebirds, and marsh birds. Continuation of this multi-region project (Regions 3, 4 & 5) included: collecting waterbird data at refuges throughout the Mississippi and Atlantic Flyways (16 refuges in Region 5); revision of bird and habitat protocols; hired biological technicians to collect data at off-refuge wetlands (2 in Region 5) with funds from the Migratory Bird Office; and continuation of model development.	Project is ongoing.	Hal Laskowski (DNR-Retired) Jennifer Casey (DNR) Bill Thompson (DNR-I&M)	I, R	IP
1F	*Coastal Impoundments/Freshwater impoundments* Used SDM to evaluate function of coastal impoundments, especially related to sea level rise.	Project is ongoing.	Hal Laskowski (DNR-Retired) Jennifer Casey (DNR)	R	IP
1F	*Open Marsh water management (OMWM)* Collection of data continued in 2011 to research ecosystem responses of saltmarshes to Open Marsh Water Management (OMWM) practices. Currently analyzing data on the following variables related to saltmarsh monitoring: nekton, saltmarsh vegetation, larval mosquito abundance, groundwater level, and soil salinity.	Project is ongoing.	Jan Taylor (DNR)	R	IP
1F	*Effects of Open Marsh Water Management on Saltmarsh Soil and Porewater Chemistry* This project comprises additional field measurements to an effort that was already planned and underway. The contractor has made several trips to the 3 refuges involved in this study: Forsythe NWR, Wertheim NWR and Parker River NWR. A preliminary report could be made available end of October 2011, but it would represent only a partial analysis of the data collected to date. The unexpected OMWM treatment of two study plots at Forsythe NWR has led to extended conversations among the refuge and regional staff and refuge partners.	Project is ongoing.	Sue Adamowicz (LMRD Biologist)	I,O	IP

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1F	*Prescribed Fire Effects on Marshlands - Delmarva Peninsula habitat management* Implement adaptive management into the decision process for habitat restoration burns applied to critical areas on federal, state, and TNC lands. In the second year of a five-year project, surveyed 60 transects with 120 elevation points per transect. Compiled the survey data and sent them to be analyzed by cooperators with the National Geodetic Survey (NGS) and USFWS-Migratory Birds.	Project is ongoing.	Laura Mitchell (R5 Fire Program) Matt Whitbeck (Chesapeake Marshlands NWR Complex)	I, O	IP
1F	*Assist in modeling and analysis of data from AM projects* Hire a modeler to be shared with Region 3 (half time).	This position is scheduled to be filled in FY12.	Hal Laskowski (DNR-Retired) Jan Taylor (DNR) Bill Thompson (DNR-I&M)	I	IP
	DATA MANAGEMENT				
General	*Region 5 Goals/Objectives Database* Consolidated CCP/HMP goals and objectives from all Region 5 refuges into one database and grouped by representative habitat or plant community to facilitate review of refuge I&M Part 1 submissions, and regional projects such as Water Quality and Quantity, Salt Marsh Integrity, Phragmites Management, Impoundment Management, and Shoreline Surveys.	Access database containing CCP/HMP goals and objectives for R5 refuges	Kelly Chadbourne (DNR-I&M)	I,R	C
1A	*WH8 Layers Database:* Determining status of GIS data layers (biotic and abiotic) identified in WH-8. Developed database to track status of WH-8 data layers on refuges, specifically to determine which refuges lack information.	Access database to track status of WH-8 data layers on refuges.	Kelly Chadbourne (DNR-I&M)	I	C
5A	*Salt Marsh Integrity Project, Sediment Elevation Tables, Coastal Shoreline Projects* Collaborating with National Park Service on review, adoption, and implementation of their Coastal Shoreline Database and Sediment Elevation Table database.	Database support	Kelly Chadbourne (DNR-I&M)	I,R	C
5A	*Coastal Shoreline Project* Responsible for ongoing Coastal Shoreline GIS Analysis for refuges participating in the Multi-Agency Coastal Shoreline Study.	Database support	Kelly Chadbourne (DNR-I&M)	I,R	C

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1F	*Phragmites Project GIS Analysis* Developed analysis to determine acres of wetlands and land use/landcover on refuges participating in the Phragmites Management SDM project.	GIS analysis	Kelly Chadbourne (DNR-I&M)	I,R	C
1F	*Integrated Waterbird Monitoring and Management (IWMM) Database* Integrated refuge CENSUS waterbird records into the newly designed IWMM database for many R5 refuges providing a means for refuges to analyze historic and current waterbird data. Worked with many refuge biologists to complete this process and continue to provide technical support.	Database development and support.	Kelly Chadbourne (DNR-I&M)	I,R	C
1F	*Shrublands Adaptive Management* Project Worked with the Shrublands Adaptive Management group of refuges and provided database support. Gave a demonstration of the database and metric calculations to the refuge biologists participating in the Shrubland Adaptive Management Project.	Database support.	Kelly Chadbourne (DNR-I&M)	I,R	C
General	*Regional Database Support* Database support includes, but is not limited to, the following databases: PRIMR, FWINS, SWIM2, Shrubland AMC database, and IWMM.	Database support	Kelly Chadbourne (DNR-I&M)	I,R	IP
General	*Fish and Wildlife Information Needs and Studies (FWINS) Database* Assisted the Office of the Science Advisor (OSA) with implementation and use of the Fish and Wildlife Information Needs and Studies (FWINS) Database. Briefed OSA on the status of FWINS and potential uses in January 2011.	Provided assistance to national office.	Kelly Chadbourne (DNR-I&M)	R	IP
General	*Acoustic Bat Multi-region/Multi-agency Protocols* Developed a SharePoint site specifically for the collection and transfer of acoustic bat monitoring surveys data. These data are being collected region-wide and this site provides a regional repository for the survey data that other agencies can gain access to gather data for analysis. All data will be archived on our regional Inventory and Monitoring drive. Region 4 has begun using this site for data retrieval and archival.	SharePoint site	Kelly Chadbourne (DNR-I&M)	R	C

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1C	*GRAS Pilot Effort* The national I&M Program is creating a centralized repository for compiling, organizing and making accessible recent and historic information that is important to refuge resource management. It is called Geospatially Referenced Archive Service (GRAS) and compiles documents and organizes datasets, such as reports, surveys, databases, geospatial data and images. In FY11, R5 reviewed the draft guidance document, chose a participating station and scheduled a site visit by interns from the national I&M Office.	Ongoing effort.	Bill Thompson (DNR-I&M) Kelly Chadbourne (DNR-I&M) Jan Taylor (DNR) Laura Eaton-Poole (DNR)	I	IP
General	*PRIMR Database Team* Served on national Team to develop definitions for the PRIMR database and to develop a consistent process for ranking refuge surveys.	Ongoing effort.	Bill Thompson (DNR-I&M)	I	IP
COMMUNICATION					
	Program Reviews Reviewed draft Part 1s of the Draft I&M Policy submitted by R5 Refuge staffs.	On-site workshops to provide guidance to refuge staff for revising their draft Part 1s. April-September, 2011	Bill Thompson (DNR-I&M) Kelly Chadbourne (DNR-I&M) Other DNR staff: Hal Laskowski (Retired) Jan Taylor Jennifer Casey Laura Eaton-Poole	I,R	IP
	Project Proposal Reviews Reviewed project proposals submitted through the Wildlife-Habitat Grants and Challenge Cost Share programs.	Ranked proposals and gave recommendations to R5's senior leadership. Developed a new guidance document and ranking criteria for these proposals. April-June 2011	Bill Thompson (DNR-I&M) Kelly Chadbourne (DNR-I&M) Other DNR staff: Hal Laskowski (Retired) Jan Taylor Jennifer Casey Laura Eaton-Poole	I,R	C

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	Chincoteague Beach Parking Lot Workshop – SDM Facilitated a structured decisionmaking workshop of refuge staff and other stakeholders to provide recommendations for the best location for a beach parking lot at Chincoteague NWR.	Final report of workshop findings and recommendations January 20-21, 2011	Hal Laskowski (DNR-Retired) Jennifer Casey (DNR) Bill Thompson (DNR-I&M)	I,R	C
	Instructor: NCTC Course"Designing and Implementing a Biological Monitoring Program"	September 19-23, 2011	Bill Thompson (DNR-I&M)	I	C
	Presentation at Regional Biologists Meeting Introduction to and overview of the new Refuge I&M program to refuge staff in R5 and key partners.	February 14-18, 2011	Hal Laskowski (DNR-Retired) Bill Thompson (DNR-I&M)	I	C
	Presentation to NPS I&M and Regional staffs Discussion of opportunities of project collaboration between Refuge and NPS I&M programs.	April 5-7, 2011	Bill Thompson (DNR-I&M)	I	C
	Presentation at the George Wright Society Meeting – Bayesian methods session. Presentation of Bayesian methods of analysis applied to I&M data. Audience primarily from NPS, especially its I&M program staff.	March 11-15, 2011	Bill Thompson (DNR-I&M)	I	C
	Annual Report and Work Plan Team Served on the National I&M Team that developed the file templates for the Annual Report and Work Plan.	February-March, 2011	Bill Thompson (DNT-I&M)	I	IP
	Instructor: SharePoint 2007 Webinar Training for Refuge biologists unfamiliar with the basics of SharePoint sites and introduced some advanced concepts.	February 2, 2011	Kelly Chadbourne (DNR-I&M)	I	C
	Instructor: SharePoint 2010 Class Training for External SharePoint Site users involved with developing Parker River NWR's CCP, Acoustic Bat Monitoring for Region 4.	January and June 2011	Kelly Chadbourne (DNR-I&M)	I	C
	Instructor: Trimble/ArcPad Class On-site training held at Forsythe and Eastern Shore of Virginia NWRs related to collecting coastal shoreline position data layers.	April 25-29, 2011	Kelly Chadbourne (DNR-I&M)	I	C

Blueprint Objectives and Tasks	Project or Theme; Status and Accomplishments	Product	I&M Staff	Funding I=I&M R=Refuges O=Other	Status P=Planned F=Funded IP=In progress C=Completed
	Instructor: SharePoint 2010 Class Training for Region 4 and their use of the Acoustic Bat Monitoring SharePoint Site.	July 18, 2011	Kelly Chadbourne (DNR-I&M)	I	C
	Instructor: Access 2007 Class Four hours of training for staff from Chesapeake Marshlands and Eastern Neck NWRs to develop queries and reports for their Integrated Waterbird Management and Monitoring (IWMM) database.	February 2011	Kelly Chadbourne (DNR-I&M)	I	C
	Instructor: Fish and Wildlife Information Needs and Studies Database Webinar demonstration to Refuge I&M Coordinators and Data Managers	September 2011	Kelly Chadbourne (DNT-I&M)	I	C
	Coastal Shoreline Survey Training Workshop Training developed for refuges participating in shoreline positions surveys in collaboration with National Park Service	March 23-24, 2011	Kelly Chadbourne (DNR-I&M)	I	C
	Coordinator: Acoustic Bat Workshop Training developed to increase the level of understanding of acoustic bat monitoring equipment and bat call analysis software, and to go over White Nose Syndrome decontamination protocol. Held at Parker River NWR.	August 15-19, 2011	Kelly Chadbourne (DNR-I&M)	I	C
	Phragmites SDM Workshop Workshop hosted by R5 refuge staff and attended by FWS and other partners to develop an effective and sustainable approach for dealing with invasive Phragmites.	November 30 - December 2, 2011	Jan Taylor (DNR) Laura Eaton (DNR)	R	C
	Peer-reviewed Article "Responses of Saltmarsh Ecosystems to Mosquito Control Management Practices Along the Atlantic Coast (U.S.A.)" by James-Pirri et al (2011)	Peer-reviewed article in *Restoration Ecology*	Jan Taylor (DNR)	R	C

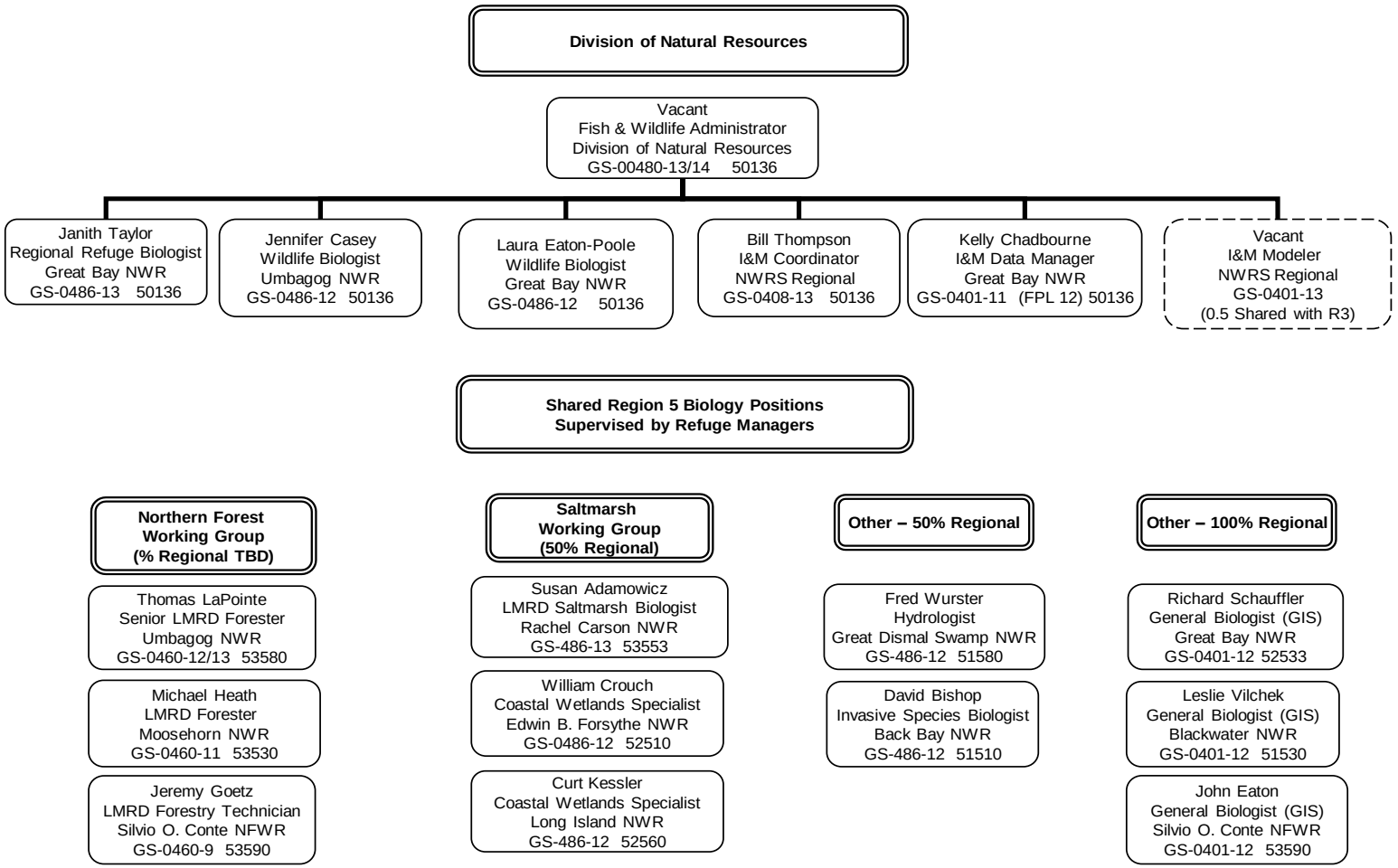
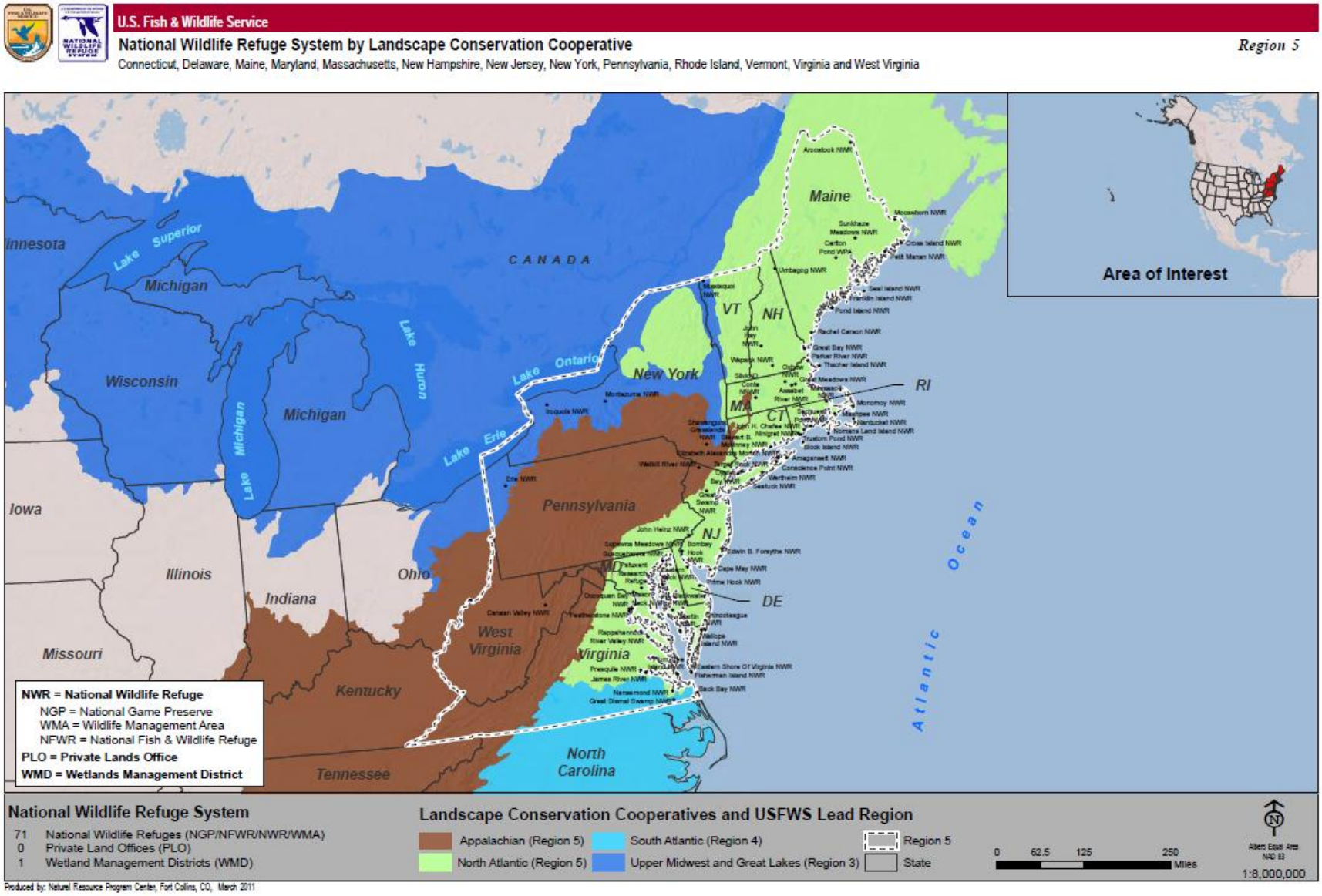


Figure 1. Organizational chart for Region 5's Division of Natural Resources plus a listing of the shared Regional Biology positions that are located at various refuges, with the percentage of time they are supposed to be devoted to regional duties (including support of I&M projects, in part).



Appendix. Map of NWRS stations in Region 5, by state and LCC.